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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,008	09/16/2003	Benedikt Sas	4532680/16900 (KEM 69)	3907

26386 7590 06/11/2007  
DAVIS, BROWN, KOEHN, SHORS & ROBERTS, P.C.  
THE FINANCIAL CENTER  
666 WALNUT STREET  
SUITE 2500  
DES MOINES, IA 50309-3993

EXAMINER
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WANG, SHENGJUN

ART UNIT	PAPER NUMBER
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1617

MAIL DATE	DELIVERY MODE
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06/11/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/664,008	<b>Applicant(s)</b> SAS ET AL.	
	<b>Examiner</b> Shengjun Wang	<b>Art Unit</b> 1617	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 March 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Claim 4 is withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on March 19, 2007.

1. Applicant's election without traverse of invention group I, drawn to method of treating Flaviviridae comprising administering a compound defined in claim 1, wherein X1, X2, Y and Z are oxygen, and hepatitis C (HCV) as the elected species of diseases treated in the reply filed on December 4, 2006 and March 19, 2007 is acknowledged. Applicant's election.

2. The claims have been examined insofar as they read on the elected invention and species.

#### *Claim Rejections 35 U.S.C. 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 5-11 rejected under 35 U.S.C. 103(a) as being unpatentable over Qian et al. (J. Traditional Chinese Medicine vol. 2, No. 4, pp 272-276), Efferth et al. (IDS), Zheng et al. (IDS), Venugopalan et al. (EP 0 456 149 A1, IDS), and Li et al. (CN 1122806 A), and in further view of Crooks et al. (US 6,677,347).

5. Qian et al. teaches that artemisinin (qinghaosu) have immunologic and antiviral activity. It augments cell-mediated immunity. See, particularly the Abstract. Efferth et al. teaches that

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artesunate is effective against cytomegalovirus, see, particularly the abstract; Zheng et al. also teaches that artemether is effective for suppressing the epidemic hemorrhagic fever virus. See, particularly, the abstract. Venugopalan et al. teaches method of treating viral infection comprising administering artemisinin compounds. See, particularly the claims. Li et al. teaches artemisinin derivatives are known to be useful as anti-tumor, antiviral and anti-parasitic agents. See, particularly the abstract. It is noted that the artemisinin derivatives employed by Venugopalan et al and Li et al. is not within the scope of artemisinin compounds defined herein, but, the compounds all have the core structure of artemisinin. The cited references as a whole have fairly teach or suggest that compounds with the core structure of artemisinin have a broad spectrum of antiviral, anti-tumor, anti-parasitic activity and have immunologic augmenting activity.

6. The prima references as a whole do not teach expressly the employment of the artemisinin compounds for treatment of hepatitis C infection, alone, or with interferon.
7. However, Crooks et al. teaches that compound that augments cell-mediated immunity, as well as interferon, are useful for treatment of tumors and viral infections, such as hepatitis C infection. See, particularly, col. 19, line 39 to col. 20, line 54.

Therefore, it would have been prima facie obvious to a person of ordinary skill in the art, at the time the claimed the invention was made, to employ artemisinin, alone, or with interferon, for the treatment of hepatitis C infection.

A person of ordinary skill in the art would have been motivated to employ artemisinin, alone, or with interferon, for the treatment of hepatitis C infection because artemisinin are antiviral agents useful against a broad spectrum of virus and are known to augment cell-mediated

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immunity and compounds augmenting cell-mediated immunity, as well as interferon, are useful for treating viral infections, such as hepatitis C infection. The further employment of interferon with artemisinin would have been obvious because both agents are known to be useful for treatment of viral infections and it is prima facie obvious to combine two compositions each of which is taught in the prior art to be useful for same purpose in order to form third composition that is to be used for very the same purpose; idea of combining them flows logically from their having been individually taught in prior art; thus, the claimed invention which is a combination of two known antiviral agents sets forth prima facie obvious subject matter. See In re Kerkhoven, 205 USPQ 1069.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shengjun Wang whose telephone number is (571) 272-0632. The examiner can normally be reached on Monday to Friday from 7:00 am to 3:30 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreeni Padmanabhan, can be reached on (571) 272-0629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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SHENGJUN WANG  
PRIMARY EXAMINER  


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Primary Examiner  
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